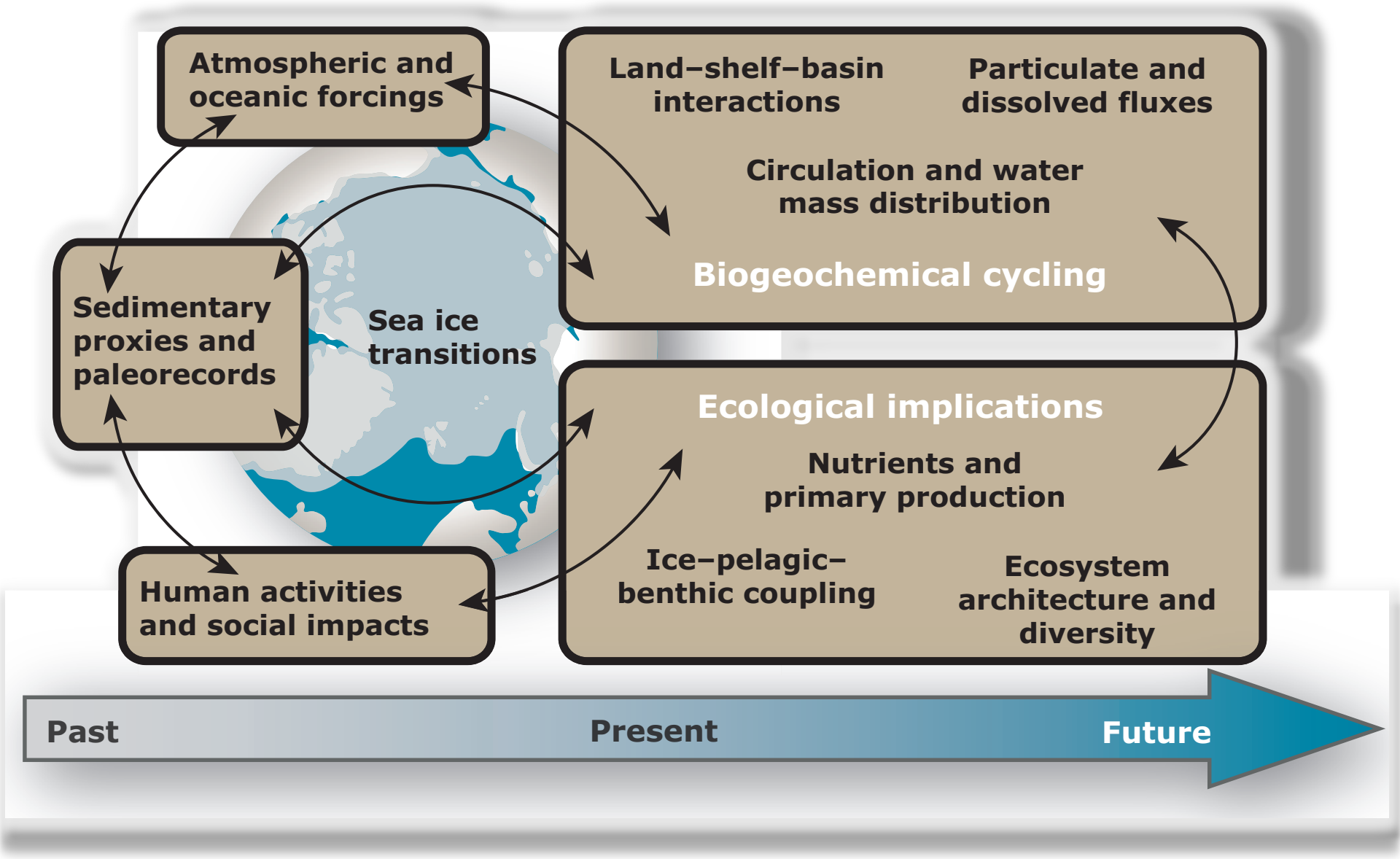
Arctic in Rapid Transition

Activities 2012 - 2013

Monika Kędra
on behalf of the ART executive committee

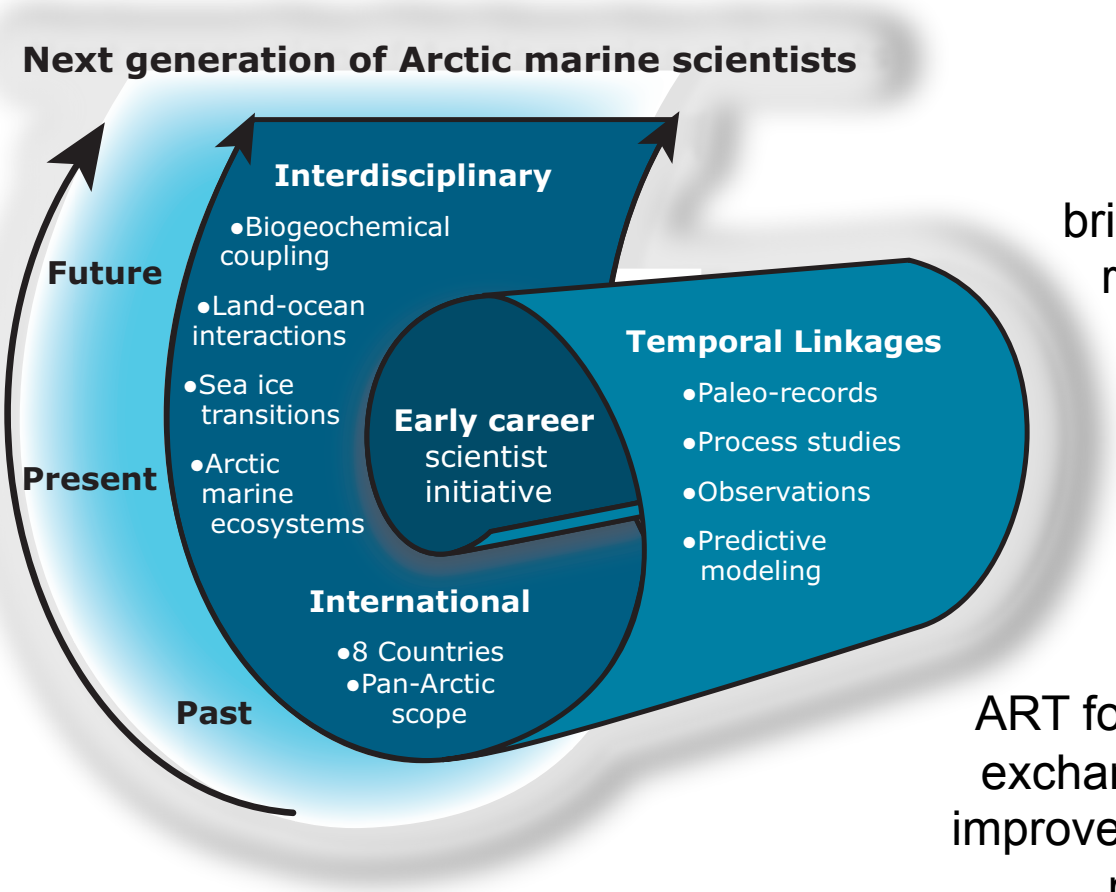
Scientific framework of ART



Why ART is unique?

International

ART is an international effort both in terms of geographic scope and of nationalities of the founding and participating scientists



Temporal Linkages

ART has a unique focus on bridging temporal aspects (paleo-records, current observational studies, modelling efforts)

Inter-disciplinary

ART fosters communication and data exchange among disciplines and will improve our understanding of the Arctic marine realm as a whole

Early Career Involvement

ART was conceived, developed, and remains steered by early career scientists, and will continue to support their active involvement

ART
Arctic in Rapid Transition

ART main activities 2012/2013

- Polarstern cruise proposal developed (including meeting in Copenhagen November 2011, AWI meeting March 2012, Copenhagen June 2012, telephone conferences) and submitted
- First science workshop in SOPOT, Poland, October 2012 and Special Issue of Polar Reserach (in progress)
- ART approved as an IASC network
- New ART EC structure; call for new EC members
- ART activities during meeting, conferences etc

POLARSTERN PROPOSAL: TRANSSIZ TRANSITIONS IN THE SEASONAL ICE ZONE

TRANSSIZ Timeline

- Arctic Science Summit Week, March, 2011 in Seoul Korea,
  Invitation to write a draft for proposal for a European led ART expedition

- Submitting letter of intend September 2011
  Ecological and biogeochemical studies on seasonal transitions (winter- , spring, fall-winter) in the European Arctic Ocean

- Meeting Copenhagen November 2011*
  Sketching draft proposal

- Meeting Bremerhaven March 2012*
  Evaluate collaboration with AWI scientists

- Meeting Copenhagen June 2012*
  Adjustment of proposal (winter- spring)

- 30th of July 2012
  Submitting proposal

First reviews positive (rated as almost excellent (A-) and good (B). Thus proposal was considered by the expert advisers for promotion.

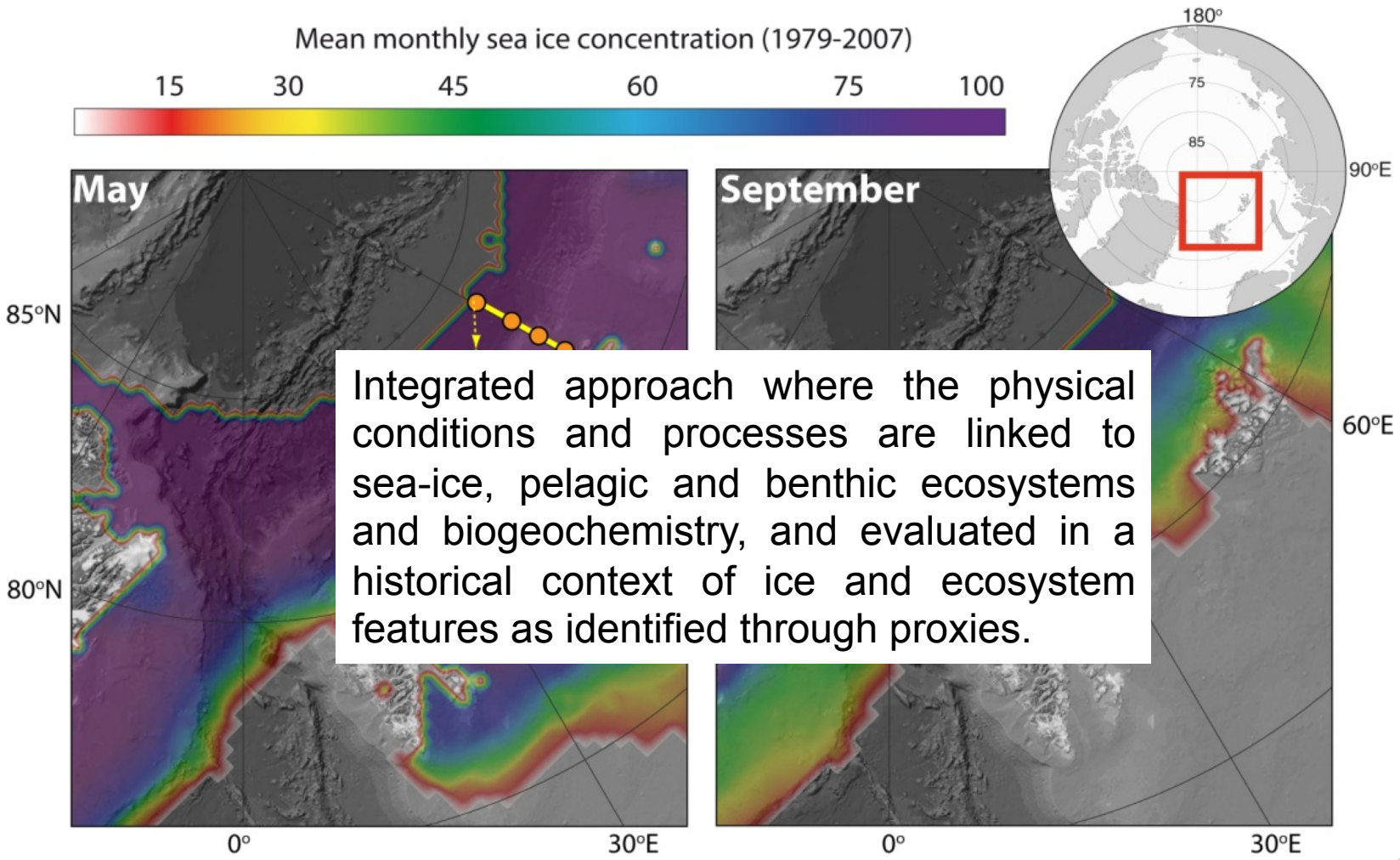
Final results will be announced in Autumn, 2013

*sponsored by IASC

TRANSSIZ: Scientific motivation

- Seasonal ice zone (SIZ) is expanding as summer ice retreats
- Shelf break opens for physical forcing with implications for biological production, nutrient distribution, water column structure
- Limited knowledge of ecosystems, productivity and physical-biological coupling north of shelf in European Arctic
- Information from non-summer periods are generally absent, and could complement the ongoing AWI ICE-ARC program, and moorings planned by the Fram center, Norway
- Aim to link geological, physical, biological process measurements and observations

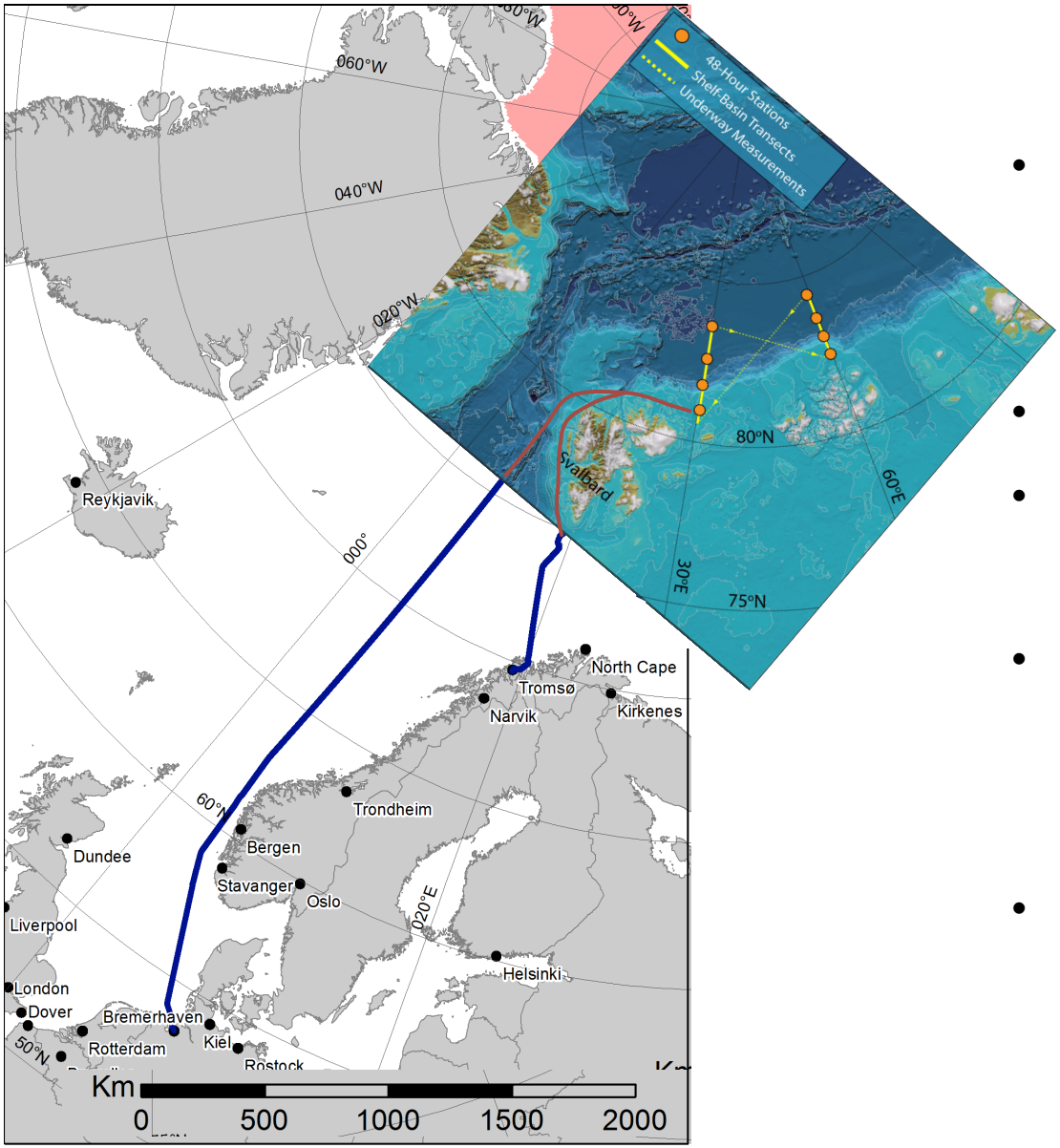
TRANSSIZ: Extension of sea ice in contrasting seasons



Integrated approach where the physical conditions and processes are linked to sea-ice, pelagic and benthic ecosystems and biogeochemistry, and evaluated in a historical context of ice and ecosystem features as identified through proxies.

Aim: target the core area of expected changes in ice conditions and resulting biological responses in the coming years (based on model simulations for 2050 and beyond).

TRANSSIZ Cruise Outline



- Early spring 2016 (April/May; alternatively 2015 or 2017)

- 13 days of transit from/to port
- 32 days of station time (12 days of transit between stations)
- 2 shelf-basin transects crossing an inflow shelf (eight 48-hours stations, CTDs in-between)
- Research permission for Russian EEZ???

TRANSSIZ: Link to other initiatives

Applied TransArc II cruise 2015

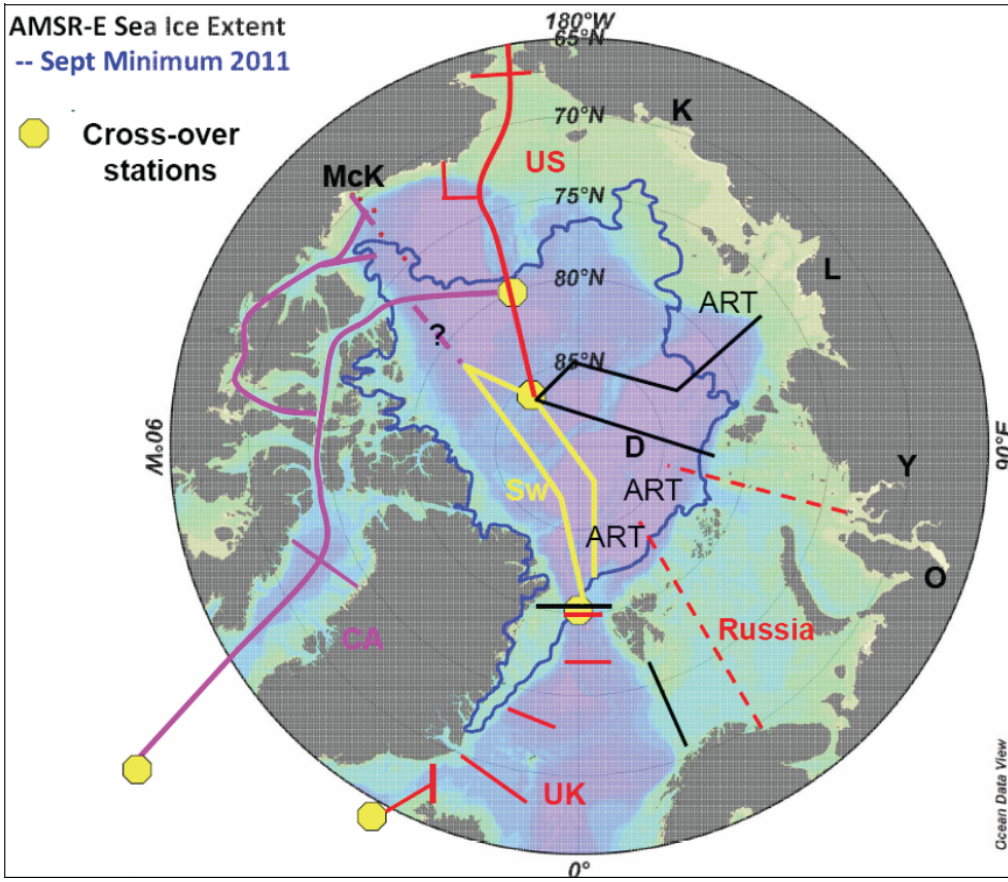
Amundsen cross Arctic cruise 2015

Multinational GEOTRACES programme for 2015 (several platforms)

Proposed winter study LANCE drift

Potential autumn/winter cruise Helmer Hanssen as part of ARCTOS

Proposed overwintering drifting observatory MOSAIC

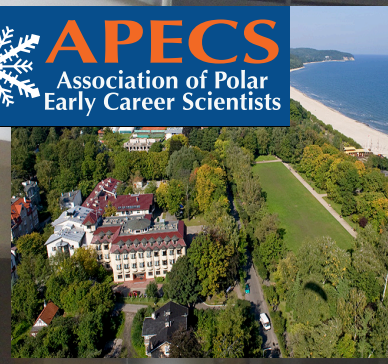


pan-Arctic GEOTRACES research program

ART-APECS Workshop 2012

IOPAN, Sopot, Poland

23-26 October 2012



ART-APECS Science Workshop

- International
- Pluridisciplinary
- Transgenerational
- Integrated multi-approaches on Arctic hydrosphere, atmosphere, cryosphere and lithosphere
- Fully organized by Early Career Scientists and ECS focused scientific meeting
- Initiative supported by an IASC cross-cutting grant, and Marine Working Group, Polish Academy of Sciences
- Jointly organized with APECS that obtained a funding through the Prince Albert II of Monaco Foundation

Main Objective:

- To integrate modelling and observations in order to identify linkages and feedbacks between atmosphere-ice-ocean forcings and biogeochemical processes that are key to ecosystem function, land-ocean interactions and to the productive capacity of the past, present and future Arctic Ocean.
- In simpler words: to look at the Arctic Ocean's Life Support System within an integrated framework
- Workshop was planned as a common ground upon which new and 'rich' ideas could emerge because of the diversity of the participants

ART-APECS Science Workshop

Structure

- 64 participants from 13 countries, including Europe, Russia, Canada and USA
- 19 PhD students, 29 Early Career Scientists, 14 Senior Scientists: early careers, mid- to late-careers integrating various disciplines, different ways of 'thinking'

- 8 training sessions on theoretical and practical aspects of marine sciences:
  - geological, hydrographical, biological and ecological consequences of sea ice decline
  - paleo-, food web and physic and biological coupling modelling
  - human dimensions (communication skills and policy aspects of the changing cryosphere)
- 12 plenary talks
- 2 poster sessions with 35 posters presented
- Break-out sessions: discussions and initiation of the writing of collaborative papers within 6 Sub Themes

ART Special issue

Submission time-window:
1st April – 1st October 2013

- Different type of papers; peer-reviewed; published as soon as accepted:
  1. Synthesis / review papers
  2. Standard research papers
  3. Educational-type papers

- As far: 6 papers planned from the sub themes discussions and 4 original papers proposed by ECS
- Coordination through ART EC
- Positively received by the Editor of Polar Research and the submission time-window (1 April until 31 October 2013) confirmed
- Revise the list of manuscripts and look for more if needed
- Monitor the progression over the next months

Meeting report on the Sopot workshop published in EOS:
Forest A, Kedra M, Pavlov A, 2013, Bridging across time-scales, disciplines and generations to better understand the changing Arctic marine ecosystem, EOS, 94(11): 107

ART - IASC network

- ART cross-cutting application for IASC network (end of January 2013)
- ART approved as IASC network

New ART EC structure and call for new EC ECS members


Carolyn Wegner (senior Chair)


Alexandre Forest (junior Chair)


Matthias Forwick


Karen Frey


Monika Kędra


Jeremy Mathis


Christine Michel


Nathalie Morata


Anna Nikolopoulos


Matt O'Regan


Ilka Peeken


Marit Reigstad


Kohei Mizobata

New ART EC structure an

- Due to the transitional nature in the ART leadership, EC will
  - permanent members (the m transitioned into professiona network activities; provide ac
  - 3 year rotating members (lat developing and implementin
- Invitation for new rotating EC close collaboration with APEC
- Scientific advice from a broad composed of leading internati different disciplines and geogr members.
- ART is currently supported by International Arctic Research Alaska, Fairbanks (http://www

Arctic in Rapid Transition Network
Executive Committee Application Form
Please return this form to: cwegner@geomar.de
Deadline: 22 May 2013

1. Contact information:

Name:
Email:
Institution:
Career level:

2. Research interests and skills (250 words max):

Please describe briefly in plain words what are your scientific interests and skills in science management.

3. Statement of motivation and action (500 words max):

Please elaborate on why you seek interest in becoming an ART EC member.

- *In which way being involved in ART will be beneficial to your research? (e.g. collaborations, joint papers, networking, etc.)*
- *How will you contribute to the ART Network, broadly and specifically? (e.g. field projects, modelling, workshops, etc.)*

4. Names and contact detail of two persons that can act as references:

For more information on the ART Science and Implementation Plan, please visit: http://www.iarc.uaf.edu/ART/

Deadline: 22 May 2013

ART in science conferences (examples)

- **IPY Montreal 2012** participation (Session chairs, invited talks, IPY Forum Momentum Series)
- **GEOTRACES/Arctic workshop**, Vancouver May 2012 (Alexandre Forest)
- **Gordon Conference on Polar Science 2013** – ART members involved as chair (Christine Michel), and 4 invited speakers

- **Arctic Observing Summit 2013,** Vancouver, Canada, 30 April – 2 May 2013 – ART presentation
- **ASLO, 2014**, Hawai, USA – ART session application
- **Arctic Frontiers 2017**: Theme "*Arctic in Rapid Transition*", science conference organised by ART

Next steps

- Meeting in Autumn with new EC members, with focus on:
  - TRANSSIZ Polarstern cruise planning,
  - ART collaboration in other planned international field campaigns
  - coordination with other IASC/ECS related initiatives
  - identification of funding sources for Polarstern cruise and 2nd ART Science Workshop

- Second ART Science Workshop; Fall 2014, IUEM, France "Integrating spatial and temporal scales in Arctic Ocean system studies"

Thanks to….

- IASC, MWG for support to arrange the Polarstern planning meetings and workshops and the First ART Science Workshop in Sopot, Poland

- Funding agencies and institutions for economical, administrative and logistic support